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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/632,867	08/04/2000	Lawrence W. Yonge III	04838-061001	2453
26161	7590	10/13/2006	EXAMINER	
FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			MEHRA, INDER P	
			ART UNIT	PAPER NUMBER
			2617	

DATE MAILED: 10/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/632,867

Applicant(s)

YONGE ET AL.

Examiner

Inder P. Mehra

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5/11/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 17-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 17-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/9/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This is in reference to response dated 5/11/06. Based on this response, claims 1-15 and 17-20 are pending.

Claim Rejections - 35 USC # 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action'.

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-9, 15, 17, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Marchetto et al.** (US 5,914,959) in view of **Kaiser et al.** (US 6,188,717) and **Jalali** (US 6,778,507), further in view of **Koizumi** (US Patent Application No. 2001/0012319).

Regarding claims 1, 9, 15 and 20, Marchetto discloses, In a network of stations connected to a shared channel, each station having a transmitter and a receiver (**communication between paging base station transceiver and mobile paging unit, refer to abstract**), a method of operating a station comprises:

Marchetto discloses adapting a connection between a transmitter and a receiver to a data rate for each carrier of the channel based on characteristics of each carrier of the channel for the connection (col. 1, line 57 - col. 2, line 28).

Marchetto fails to expressly disclose transmitting data across a plurality of different connections between any of a plurality of transmitters and any of a plurality of receivers, and that

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the data rate established for at least some carriers differs from the data rate established for at least some other carriers.

Kaiser discloses a multi-carrier wireless communication system that permits variable data rates for each individual subscriber (col. 5, line 66 - col. 6, line 10). Kaiser discloses the need to transmit audio, video, text data, etc. as a motivation for providing variable data rate communication among ditàkrent subscribers.

Jalali discloses a system that includes a plurality of different connections between a plurality of receivers and plurality of transmitters (see Figure 1).

Koizumi discloses more explicitly the following limitation:

“adapting connections between particular pairs of transmitter and receiver to establish a data rate for each carrier of the channel based on characteristics of each carrier of the channel for the connection between a particular pair of transmitter and receiver, wherein the data rate established for at least some carriers for at least one pair differs from the data rate established for the same carriers for at least one other pair”, (Koizumi (US Patent No. 6393051) discloses, **“a digital subscriber line communicating system for communicating modulated symbols between a transmitting side and a receiving side through a communication line, comprising: a bitmap calculating unit, provided in the receiving side, for calculating a bit map which defines the number of transmissible bits for each carrier signal al of the symbols in each of periodical noise durations, ---; and a rate converter, provided in the transmitting side, for converting a constant rate of an input transmitting data into a rate determined by the bitmap, and for adding, in a predetermined number of the periodical noise durations, dummy bits to the data having the converted rate---. The bitmap**

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calculating unit includes a line quality measuring unit for measuring the quality of the communication line in each of the periodical noise durations, a transmission bit number converter for calculating the number of transmissible bits to be allocated to each carrier to form the bitmap, and a bitmap optimizing unit for minimizing the dummy bits by decreasing the number of the transmissible bits allocated to each carrier signal of the symbols”, refer to col. 1 line 55 through col. 2 line 12).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to adapt some connections to operate at a different data rate than others. Also, it would have been obvious to include connections between a plurality of receivers and a plurality of transmitters through the use of an array of antennas at a base station and multiple mobile stations. One of ordinary skill in the art would have been motivated provide variable data rates to maintain efficient use of resources when different subscriber stations have different bandwidth requirements. One of ordinary skill in the would also have been motivated to reduce long data transmission delay.

Regarding claim 2, Marchetto discloses a transmitter sending a pilot symbol in a frame to a receiver, and at the receiver determining from the frame the characteristics of the channel for the connection and generating channel information. Marchetto also discloses sending the channel information to the transmitter for use in transmissions to the receiver (col. 1, line 65 - col. 2, line 24).

Regarding claim 3, Marchetto discloses optimizing delivery of subsequent communications (col. 2, lines 20-24).

Regarding claim 4, Marchetto discloses repeating the adapting after a predetermined timeout (col. 6, lines 28-39).

Regarding claim 5, Marchetto discloses adapting the transmission rate in between transmissions (col. 5, 21-24), which represents a frame transmission recovery.

Regarding claim 6, Marchetto discloses repeating the adapting in response to an indication from the receiver (col. 5, 21-27).

Regarding claim 7, Marchetto discloses adapting due to a change in the number of bit errors occurring in transmissions to the receiver (col. 2, lines 11-16).

Regarding claim 8, Marchetto disclose that the data rate may be the maximum data rate (col. 5, lines 13-21).

Regarding claims 17 and 18, Marchetto discloses a transmitter sending a pilot symbol in a frame to a receiver, and at the receiver determining from the frame the characteristics of the channel for the connection and generating channel information. Marchetto also discloses sending the channel information to the transmitter for use in transmissions to the receiver (col. 1,

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line 65 - col. 2, line 24).

4. Claims 10-12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marchetto et al. (US 5,914,959) in view of Myers et al. (US 6,216,244) and Jalali (US 6,778,507).

Regarding claim 10, Marchetto discloses a receiver sending an indication of the data rate, or signal constellation, to a transmitter so that the data will be transmitted from the transmitter to the receiver at a rate that insures reception (col. 5, lines 42-47). In this embodiment, the signal constellation represents the channel map of the present invention, and the indication of that signal constellation represents the channel map index of the present invention.

Marchetto also discloses sending constellation information, representing the channel map index, in a transmission from the transmitter to the receiver (col. 6, lines 17-28).

Marchetto fails to expressly disclose transmitting data across a plurality of different connections between any of a plurality of transmitters and any of a plurality of receivers, and that the encoding and modulating for at least some carriers differs from that used for at least some other carriers.

Myers discloses using different encoding and modulation for different carriers (col. 3, lines 49-61, see also Figure 4). Jalali discloses a system that includes a plurality of different connections between a plurality of receivers as well as a plurality of transmitters (see Figure 1).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use different encoding and modulation for different carriers in the invention of Marchetto. Also, it would have been obvious to include connections between a plurality of

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receivers and a plurality of transmitters through the use of an array of antennas at a base station and multiple mobile stations. One of ordinary skill in the art would have been motivated provide different encoding and modulation in order to equalize gain differences based on distances of mobile units to a base station. One of ordinary skill in the would also have been motivated to include the plurality of connections between receivers and transmitters in order to reduce intra cell interference through the use of beam forming.

Regarding claim 11, Marchetto discloses a system data frame (col. 3, lines 10-21), which represents the frame control field of the present invention.

Regarding claim 12, Marchetto discloses using a channel map index, but fails to expressly disclose using the same channel map index at more than one receiver.

Myers discloses areas within a cell wherein the encoding and modulation rate is the same (see Figure 2).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use the same channel map index for more than one connection. One of ordinary skill in the art would have been motivated to do this in order to provide two different connections within a particular sector of a cell with the appropriate encoding and modulation information for that Sector.

Regarding claim 19, Marchetto discloses a transmitter sending a pilot symbol in a frame to a receiver, and at the receiver determining from the frame the characteristics of the channel for

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the connection and generating channel information. Marchetto also discloses sending the channel information to the transmitter for use in transmissions to the receiver (col. 1, line 65 - col. 2, line 24).

5. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marchetto et al. (US 5,914,959) in view of Myers et al. (US 6,216,244) and Jalali (US 6,778,507) as applied to claims 10-12 above, and further in view of Petry et al. (US 6,538,985).

Regarding claim 13, Marchetto in view of Myers and Jalali fails to expressly disclose that the channel is a power line.

Petry discloses an OFDM protocol that is compatible with Ethernet, which is used as a wired technology (col. 4, lines 1-6). Ethernet represents a technology wherein the channel is a power line, as in the present invention. At the time the invention was made,

It would have been obvious to a person of ordinary skill in the art to use a power line as a channel. One of ordinary skill in the art would have been motivated to do this to support the system of Marchetto in view of Myers and Jalali in a variety of types of communication systems.

Regarding claim 14, Marchetto in view of Myers and Jalali fails to expressly disclose using OFDM.

Petry discloses a MAC protocol for a local area network using orthogonal frequency division multiplexing (OFDM) (col. 2, lines 54-56).

As is well known in the art, multiplexing techniques are used to allow multiple users to share a communication channel. At the time the invention was made, it would have been obvious

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to a person of ordinary skill in the art to use OFDM in the system provided by Marchetto in view of Myers and Jalali. One of ordinary skill in the art would have been motivated to use OFDM in order to multiplex a number of receivers onto a channel for communication with a transmitter.

Response to Arguments

6. Applicant's arguments with respect to claim 1-15 and 17-20 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues, "The invention requires that "the manner in which at least some carriers are used is different for at least some pairs from the manner in which the same carriers are used for at least some other pairs". Thus, for example, the same carrier might have one data rate (or one type of modulation, etc.) for one connection pair, and a different data rate (or a zero data rate, or a different type of modulation, etc.) for another connection pair. None of the examiner's references comes even remotely close to suggesting this feature of the invention.

Applicant, further argues, "Marchetto teaches channel adaptation, but for a single carrier, and for transmission between the same transmitter and receiver".

Applicant, further argues, "Kaiser uses different data rates between the base station and the multiple subscriber stations, but the difference in data rate is not for adaptation to the channel, but to accommodate different data types being transmitted to/from a subscriber station (e.g., voice versus computer data). This is what is taught at the lines referred to by the examiner (col. 54, line 66 - col. 6, line 10). Furthermore, the different data rates are the overall data rates of the connection, and not different data rates assigned to different carriers".

Jalali also appears silent on channel adaptation.

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Applicant, further argues "Foley, the examiner's new reference, teaches single carrier communication, and thus gives no suggestion of the claim's requirement that "the manner in which at least some carriers are used is different for at least some pairs from the manner in which the same carriers are used for at least some other pairs"

In claims 1 and 15, changes are made in a carrier's data rate. In claim 10, changes are made to a channel map that "provides for the encoding and modulating for at least some carriers for at least one pair to be different from that used for the same carriers for at least one other pair." None of the examiner's references teaches these limitations.

In response to all above arguments, Examiner states, "Koizumi (US Patent No. 6393051) discloses, "a digital subscriber line communicating system for communicating modulated symbols between a transmitting side and a receiving side through a communication line, comprising: a bitmap calculating unit, provided in the receiving side, for calculating a bit map which defines the number of transmissible bits for each carrier signal of the symbols in each of periodical noise durations, ---; and a rate converter, provided in the transmitting side, for converting a constant rate of an input transmitting data into a rate determined by the bitmap, and for adding, in a predetermined number of the periodical noise durations, dummy bits to the data having the converted rate---. The bitmap calculating unit includes a line quality measuring unit for measuring the quality of the communication line in each of the periodical noise durations, a transmission bit number converter for calculating the number of transmissible bits to be allocated to each carrier to form the bitmap, and a bitmap optimizing unit for minimizing the

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dummy bits by decreasing the number of the transmissible bits allocated to each carrier signal of the symbols", refer to col. 1 line 55 through col. 2 line 12.

In light of above explanation, arguments by applicant are not persuasive.

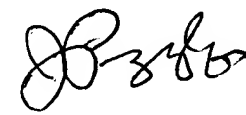
Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Inder P. Mehra whose telephone number is 571-272-3170. The examiner can normally be reached on Monday through Friday from 8AM to 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on 571-272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Inder Pal Mehra 10/5/06
Inder P Mehra
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